
आौद्योगिक सफेद तेल — विशिष्टि

(दूसरा पुनरीक्षण)

Industrial White Oil — Specification

(Second Revision)

ICS 75.100

© BIS 2022



भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
मानक भवन, 9 बहादुरशाह ज़फर मार्ग, नई दिल्ली – 110002
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI-110002
www.bis.gov.in www.standardsbis.in

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards after the draft finalized by the Lubricants and their Related Products Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

This standard was originally published in 1957 and subsequently it was amended in 1963 and 1966. The standard was initially revised in 1978 in order to reflect the better quality of the material available in the market. In the first revision the title of the specification was changed and medium and heavy types of white oils were included. All the requirements given in the standard were modified and additional characteristics such as relative density, odour, cloud point, carbonizable substances, stability test, and copper strip corrosion test were also incorporated. In addition, a UV absorption test was prescribed in order to make the specification more stringent.

In this second revision the title of the specification has been updated and reference clause has been added. Viscosity Grade (VG) grade reference to light, medium and heavy types of white oils (sub classification of oils within the classified groups) have been included, as being addressed in the market. For any specific value within a specified range of viscosity, shall be as agreed by the supplier and purchaser. The test temperature for kinematic viscosity has been changed to 40 °C in line with the ISO VG testing procedures. The requirement of UV absorption test has been modified in line with US FDA 21 CFR 178.3620 (b). The requirements of cloud point, sulphur and sulphides, and readily carbonizable substances test are removed, as these tests are no more in use for white oils used in industries other than food and cosmetic industries. IS 7299 : 2021 ‘Light liquid paraffin for cosmetic industry — Specification (*second revision*)’ exists for white mineral oils that are used in cosmetic and food grade industries. Reference clause has also been included.

The composition of the Committee responsible for the formulation of this standard is given in Annex C.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 ‘Rules for rounding off numerical values (*revised*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

INDUSTRIAL WHITE OIL — SPECIFICATION

(Second Revision)

1 SCOPE

This standard prescribes the requirements and methods of sampling and test for white oils, suitable for various industrial purposes.

2 REFERENCES

The following Indian Standards contain provisions which, through reference in this text, constitute the provisions of the standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards.

<i>IS No.</i>	<i>Title</i>	<i>IS No.</i>	<i>Title</i>
1070 : 1992	Reagent grade water — Specification (<i>third revision</i>)	(Part 68) : 1967	Evaporation loss in greases (22-hour drying)
1447 (Part 1) : 2021	Methods of sampling of petroleum and its products: Part 1 Manual sampling (<i>second revision</i>)	(Part 105) : 1980	Ultraviolet (UV) absorbance and absorptivity of petroleum products
1448	Methods of tests for petroleum and its products		
(Part 4/Sec 2) : 2021	Part 4/Section 2 Ash from grease, sulphated ash and water soluble ash (<i>fourth revision</i>)		
(Part 14) : 2019	Colour by Saybolt chromometer (<i>first revision</i>)		
(Part 15) : 2004/ ISO 2160 : 1998	Petroleum products — Corrosiveness to copper — Copper strip test (<i>third revision</i>)		
(Part 25/Sec 1) : 2018/ ISO 3104 : 1994	Transparent and opaque liquids, Section 1 Determination of kinematic viscosity and calculation of dynamic viscosity (<i>second revision</i>)		
(Part 55/Sec 1) : 2004	Determination of saponification value of petroleum products (<i>first revision</i>)		

3 TYPES

There shall be three types of white oils, namely, light, medium and heavy.

4 REQUIREMENTS

4.1 Description

The material shall be a transparent colourless oily liquid, free from fluorescence by daylight, odourless and tasteless.

4.2 Solubility

The material shall be practically insoluble in water and alcohol and shall be soluble in chloroform, solvent ether, and petroleum solvents.

4.3 The material shall also comply with the requirements given in Table 1 when tested according to the methods given in col 12 of Table 1.

5 PACKING AND MARKING

5.1 Packing

The material shall be packed in suitable containers as agreed to between the purchaser and the supplier.

5.2 Marking

5.2.1 Material shall be marked with the following information:

- a) Name and type of material;
- b) Manufacturer's name, initials or trade-mark, if any;
- c) Net mass of material;
- d) Identification in code or otherwise to enable the lot of consignment or manufacture to be traced back from records; and
- e) Any other statutory requirements.

5.2.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

6 SAMPLING

6.1 Representative test samples of the material shall be drawn as prescribed in IS 1447 (Part 1).

6.2 Number of Tests

Test for all the characteristics given in 3 shall be carried out on the composite sample.

6.3 Criteria for Conformity

The material shall be taken to have conformed to this specification if the composite sample passes all the requirements specified in the standard.

7 QUALITY OF REAGENTS

Unless specified otherwise, pure chemicals and distilled water (IS 1070) shall be used in tests.

NOTE — ‘Pure chemicals’ shall mean chemicals that do not contain impurities which affect the result& of analysis.

Table 1 Requirements for Industrial White Oils

(Clause 4.3)

SI No.	Characteristics	Requirements									Method of Test Ref. To Annex/Part of IS 1448	
		Light					Medium		Heavy			
ISO Viscosity Grades		VG 8	VG 10	VG 12	VG 15	VG 22	VG 32	VG 46	VG 68	VG 100	3	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)		
i)	Kinematic Viscosity at 40 °C, cSt.	7.00-9.00	9.00-11.00	11.00-13.00	13.50-16.50	19.80-24.20	28.80-35.20	41.40-50.60	61.20-74.80	85.00-110.00		
ii)	Relative Density at 20/20 °C	0.815 to 0.910										
iii)	Odour											
	a) At room temperature	None										
	b) When heated at 95 °C to 98 °C for half an hour in a water-bath	Not objectionable odour and not reminiscent of sulphur compounds										
iv)	Pour Point, °C, Max	-6									Part 10	
v)	Flash Point, COC, °C, Min	140	150	150	160	180	200	200	210	230		
vi)	Acidity/Aalkalinity	To Pass the test									A	
vii)	Saponification value, mg KOH/g, Max	Nil									Part 55/Sec 1	
viii)	Colour, Saybolt, Min	+25										
ix)	Ash, percentage by mass, Max.	0.01									Part 4/Sec 2	
x)	Copper Strip corrosion test at 100 °C	Not Worse Than No.1										
xi)	Ultra Violet Absorbance, Abs/cm, Max										Part 105	
	a) At 280-289 nm	4.0										
	b) At 290-299 nm	3.3										
	c) At 300-329 nm	2.3										
	d) At 330-350 nm	0.8										
xii)	Stability Test	To Pass the test									B	

ANNEX A

[*Table 1, Sl. No (vi)*]

TEST FOR ACIDITY AND ALKALINITY

A-1 PROCEDURE

Boil 5 gm of the sample with 10 ml of alcohol (90 percent) previously neutralized to litmus solution,

blue or red. The material shall be taken to have passed the test if the alcohol is neutral to litmus solution, means, neither blue litmus nor red litmus change colour.

ANNEX B

[*Table 1, Sl. No (xii)*]

TEST FOR STABILITY

B-1 PROCEDURE

Place 125 ml of the sample in a 250 ml beaker under an UV lamp (220 V; 200 to 300 W) in a suitable dark cabinet, so that the bulb is between 230 to 300 mm of the top layer of the oil and expose it for a total period

of 6 h. At the end of the test, check the colour of the oil sample, the material shall be taken to have passed the test, if the colour of the exposed oil is not darker than 20 Saybolt units.

ANNEX C(*Foreword*)**COMMITTEE COMPOSITION**

Lubricants and their Related Products Sectional Committee, PCD 25

<i>Organization</i>	<i>Representative(s)</i>
Gulf Oil Lubricants India Ltd, Mumbai	DR Y. P. RAO (<i>Chairman</i>)
Afton Chemicals, Mumbai	SHRI JEENAL PATEL SHRI ANAND PATEL (<i>Alternate</i>)
Ashok Leyland Ltd, Chennai	SHRI. D. BALAKRISHNAN SHRI YOGESH R. MAHAJAN (<i>Alternate</i>)
Bajaj Auto Ltd, Pune	SHRI K. RAJAN
BASF India Limited	MS ANJU SHARMA SHRI ASHOK SAMBANDAM (<i>Alternate</i>)
Balmer Lawrie & Co Ltd, Kolkata	DR BALARAM GHOSH DR M. L. DAS (<i>Alternate</i>)
BHEL (R and D), Hyderabad	REPRESENTATIVE
Bharat Petroleum Corporation Ltd, Mumbai	SHRI DEBASHIS GANGULI DR TARUNENDR SINGH(<i>Alternate</i>)
Bosch India Ltd, Bengaluru	SHRI A. FREDRICK SHRI D. RAMARAJU (<i>Alternate</i>)
Castrol India Ltd, Mumbai	SHRI ASHISH GONDAL SHRI RAMAN RAI (<i>Alternate</i>)
Centre for High Technology, New Delhi	SHRI P. RAMAN SHRI SHEKAR RAMCHANDRA (<i>Alternate</i>)
Chennai Petroleum Corporation Ltd (CPCL), Chennai	DR V. SELVAVATHI SHRI H. RAMAKRISHNAN (<i>Alternate</i>)
Central Pollution Control Board, (Ministry of Environment & Forests), New Delhi	SHRI DINABANDHU GOUDA SHRI B. K. JAKHMOLA (<i>Alternate</i>)
Consumer Guidance Society of India, Mumbai	DR SITARAM DIXIT DR M. S. KAMATH (<i>Alternate</i>)
DRDO, Ministry of Defence, Ahmednagar (Maharashtra)	SHRI K. MATHIVANAN SHRI K. SENTHIL KUMAR (<i>Alternate</i>)
DGMS, Dhanbad	REPRESENTATIVE
FSSAI, New Delhi	REPRESENTATIVE
Gulf Oil Lubricants India Ltd, Mumbai	SHRI GIRISH JANGE
Hero Moto Corp Ltd, Gurugram	SHRI AJAY GUPTA SHRI ASHOK KATARIA (<i>Alternate</i>)
Hindustan Petroleum Corporation Ltd, Mumbai	DR A. K. JAIN SHRI VISHAL BAJPAI (<i>Alternate</i>)
Indian Additives Ltd, Chennai	SHRI AANISH DWARKADAS SHRI SRIKANTHAN (<i>Alternate</i>)
Indian Institute of Petroleum, Dehradun	DR ANIL KUMAR SINHA DR G. D. THAKRE (<i>Alternate I</i>) SHRI SAILESH KUMAR SINGH (<i>Alternate II</i>)

<i>Organization</i>	<i>Representative(s)</i>
Indian Oil Corporation (R & D), Faridabad	DR DEEPAK SAXENA DR PANKAJ BHATNAGAR (<i>Alternate</i>)
Indian Oil Corporation Ltd, (Marketing Division), Mumbai	SHRI SANJEEV KUNDU DR A. S. KATHAIT (<i>Alternate</i>)
Indian Oil Corporation Ltd, (Refineries), New Delhi	SHRI ASHWANI SHARMA SHRI R. K. CHUGH (<i>Alternate</i>)
ISMA	REPRESENTATIVE
Lubrizol India Ltd, Mumbai	SHRI ANAND REDKAR SHRI D. S. PADMANABHAN (<i>Alternate</i>)
Mahindra & Mahindra Ltd, Chennai	SHRI R. RAMAPRABHU
Maruti Udyog Ltd, Gurugram	SHRI ASHOK PERMUDÉ SHRI NARINDER KUMAR (<i>Alternate</i>)
Ministry of Road Transport & Highways, New Delhi	REPRESENTATIVE
National Test House, Kolkata	DR S. N. BANDOPADHYAY DR UMESH SINGH (<i>Alternate</i>)
NETRA	SHRI P. K. JAIN
PCRA	SHRI M. P. BANGWAL
RDSO, Ministry of Railways, Lucknow	SHRI RAJESH SRIVASTAVA SHRI SONAM GUPTA (<i>Alternate</i>)
SAIL, Ranchi	SHRI ANUJIT RITURAJ SHRI BALAKRISHNA BISOYI (<i>Alternate</i>)
Society of Indian Automobile Manufacturers, New Delhi	SHRI P. K. BANERJEE SHRI ATANU GANGULI (<i>Alternate</i>)
Steel Authority of India Ltd, New Delhi	SHRI AVADESH KUMAR GUPTA SHRI G. SNEHA RAJU (<i>Alternate</i>)
Swastik Oil Products Mfg Co Pvt Ltd	SHRI BHUPENDRA RATHOD SHRI SANAT RATHOD (<i>Alternate</i>)
Tata Motors Ltd, Pune	SHRI P. B. DAKHOLE SHRI S. B. GUDEKAR (<i>Alternate</i>)
TVS Motor Company Ltd, Hosur, Tamil Nadu	SHRI AJITH KUMAR
BIS Director General	SHRIMATI NAGAMANI. T, SCIENTIST 'E' AND HEAD (PCD) [REPRESENTING DIRECTOR GENERAL (<i>Ex-officio</i>)]

Member Secretary
SHRI ARIDAMAN
SCIENTIST 'B', PCD, BIS

Industrial Lubricant and Speciality Products Subcommittee, PCD 25 : 2

<i>Organization</i>	<i>Representative(s)</i>
Shell India Markets Private Ltd, Mumbai	SHRI SHIVA KASTURI (Convener)
Afton Chemicals Private Ltd, Mumbai	SHRI ANAND KUMAR SHRI VISHAL NANDURKAR (<i>Alternate</i>)
Apar Industries Limited, Mumbai	DR. T. C. S. M. GUPTA SHRI R. N. BHOOPATKAR (<i>Alternate</i>)
BASF India Limited, Mumbai	MS ANJU SHARMA SHRI ASHOK SAMBANDAM (<i>Alternate</i>)
Balmer Lawrie & Co Ltd, Mumbai	DR M. L. DAS SHRI BALARAM GHOSH (<i>Alternate I</i>) SHRI ROHIT AGARWAL (<i>Alternate II</i>)
Bharat Petroleum Corporation Limited, Mumbai	SHRI SARVESH S. TOMAR DR KASHINATH SUTAR (<i>Alternate</i>)
Castrol India Limited, Mumbai	SHRI ASHISH GONDAL SHRI RAMAN RAI (<i>Alternate</i>)
Defence Research Development Organisation, New Delhi	SHRI R. S. DIWAKAR SHRI G. S. LAL (<i>Alternate</i>)
Gulf Oil Lubricants India Limited, Mumbai	SHRI SANJAY KUMAR SHRI C. T. CHIDAMBARAM (<i>Alternate I</i>) SHRI VINOD KUMAR D. (<i>Alternate II</i>)
Hindustan Petroleum Corporation Limited, Mumbai	DR A. K. JAIN SHRI VISHAL BAJPAI (<i>Alternate</i>)
Indian Additives Limited, Chennai	SHRI AANISH DWARKADAS SHRI SRIKANTHAN (<i>Alternate</i>)
Indian Institute of Petroleum, Dehradun	DR G. THAKKAR SHRI DEVENDRA SINGH (<i>Alternate</i>)
Indian Oil Corporation (Marketing Division), Mumbai	SHRI NITISH MITTAL SHRI S. VENKATESAN (<i>Alternate</i>)
Indian Oil Corporation (R & D), Faridabad	DR KAVITA RAI DR CHANAKYA TRIPATHI (<i>Alternate</i>)
Lubrizol India Limited, Mumbai	SHRI ANAND REDKAR SHRI D. S. PADMANABHAN (<i>Alternate</i>)
Ministry of Petroleum and Natural Gas, Oil Industry Safety Directorate, New Delhi	SHRI P. RAMAN
RDSO, Ministry of Railways, Lucknow	SHRI RAJESH SRIVASTAVA SHRI SONAM GUPTA (<i>Alternate</i>)
S S Industrial Corporation, New Delhi	SHRI T. S. SETHI
Sah Petroleums Limited, Mumbai	SHRI H. A. ANAND SHRI D. W. RAUT (<i>Alternate</i>)
Sarbi Petroleum & Chemicals Private Limited, Mumbai	SHRI R. BHATNAGAR
Siddharth Grease and Lubes Private Limited, Gurugram	SHRI E. SAYANNA
Steel Authority of India Limited, Bokaro	REPRESENTATIVE
Swastik Oil Products Manufacturing Company Private Limited, Mumbai	SHRI BHUPENDRA R. RATHOD SHRI ANUP R. RATHOD (<i>Alternate</i>)

<i>Organization</i>	<i>Representative(s)</i>
Tide Water Oil Co (I) Ltd, Kolkata	SHRI JAIDEEP M. SARNAIK SHRI C. S. BALAMURUGAN (<i>Alternate</i>)
The Western India Genuine Ghee Company Private Limited, Mumbai	SHRI DHANESH RATHOD SHRI PARESH RATHOD (<i>Alternate</i>)
National Test House, Kolkata	REPRESENTATIVE
Valvoline Cummins Private Limited, Faridabad	REPRESENTATIVE
Ultra Plus Lubes Private Limited, Mumbai	REPRESENTATIVE
NPL Bluesky Automotive Pvt Limited, Sonipat	REPRESENTATIVE

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 2016 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in the course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Director (Publications), BIS.

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards: Monthly Additions'.

This Indian Standard has been developed from Doc No.: PCD 25 (16196).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones: 2323 0131, 2323 3375, 2323 9402

Website: www.bis.gov.in

Regional Offices:

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110002	<i>Telephones</i>
	{ 2323 7617 2323 3841

Eastern : 1/14 C.I.T. Scheme VII M, V.I.P. Road, Kankurgachi KOLKATA 700054	<i>Telephones</i>
	{ 2337 8499, 2337 8561 2337 8626, 2337 9120

Northern : Plot No. 4-A, Sector 27-B, Madhya Marg CHANDIGARH 160019	<i>Telephones</i>
	{ 265 0206 265 0290

Southern : C.I.T. Campus, IV Cross Road, CHENNAI 600113	<i>Telephones</i>
	{ 2254 1216, 2254 1442 2254 2519, 2254 2315

Western : Manakalaya, E9 MIDC, Marol, Andheri (East) MUMBAI 400093	<i>Telephones</i>
	{ 2832 9295, 2832 7858 2832 7891, 2832 7892

Branches : AHMEDABAD. BENGALURU. BHOPAL. BHUBANESHWAR. COIMBATORE. DEHRADUN. DURGAPUR. FARIDABAD. GHAZIABAD. GUWAHATI. HYDERABAD. JAIPUR. JAMMU. JAMSHEDPUR. KOCHI. LUCKNOW. NAGPUR. PARWANOO. PATNA. PUNE. RAIPUR. RAJKOT. VISAKHAPATNAM.	<i>Telephones</i>
--	-------------------